

REMARKS

Favorable reconsideration of this application in light of the following discussion is respectfully requested.

Claims 1-20 are pending in this application. Claims 9-14, 16, 17, and 20 were withdrawn from consideration. No claims are canceled, amended, or added by the present response.

In the outstanding Office Action, Claims 1-8, 15, 18, and 19 were rejected under 35 U.S.C. § 103(a) as unpatentable over Tazawa et al. (U.S. Patent No. 5,508,563, herein “Tazawa”) in view of Damon et al. (U.S. Patent No. 3,825,876, herein “Damon”), which is respectfully traversed for the following reasons.

Briefly recapitulating, independent Claim 1 is directed to a semiconductor device that includes a plastic package, a plurality of leads protruding outward from the plastic package, a semiconductor element protected by the plastic package, and electric wirings. The electric wirings connect the semiconductor element with the plurality of leads and the plurality of leads is inserted into a lead-inserting portion of an external electric member to mount the semiconductor device on the external electric member. Each lead of the plurality of leads includes a first lead portion located at a plastic package side, a second lead portion located at a position closer to a lead tip end than the first lead portion, and a third lead portion located at a position closer to the lead tip end than the second lead portion. The third lead portion is inserted into the lead-inserting portion of the external electric member. In addition, at least some leads of the plurality of leads are formed as gap-controlling leads provided with gap-controlling portions to maintain constant a gap between the semiconductor device and the external electric member “by inserting at least some of the third lead portions into said external electric member up to said gap-controlling lead.”

In a non-limiting example, Figure 3 shows the semiconductor device 1 having the plurality of leads 4a, 4b, each lead having the first lead portion 21, the second lead portion 22, and the third lead portion 23. Some of the leads have the gap-controlling portion 9 and the third lead portion 23 is inserted into the external electric member 25 to maintain constant the gap d between the semiconductor device 1 and the external electric member 25.

Turning to the applied art, Tazawa shows in Figures 3(a) and 3(b) an interconnection portion 13 having various portions that are asserted by the outstanding Office Action, in the paragraph bridging pages 3 and 4, as corresponding to the claimed portions of the plurality of leads. Further, Tazawa shows in Figure 1 that a plurality of semiconductor elements 11a-11d are formed in containers 10a-10d, and each semiconductor element has an external lead (12a-12d, for example). The interconnection portion 13 is provided at a distal end of each of the external leads 12a-12d, such that the “first and second containers containing respective semiconductor chips are stacked one over the other and first and second external leads extending from the insides of the respective containers to are bent as extended to surfaces of the second and first containers to be connected to each other.”¹

In other words, Tazawa uses the interconnection portions 13 to connect various semiconductor elements in top of each other to reduce a space for mounting the semiconductors elements on an external electric member 15. In addition, Tazawa shows in Figure 1 that a first portion of the external leads 12, closer to the container 10 than the interconnection portion 13, is used to connect the semiconductor element to the external electric member 15. Thus, the interconnection portion 13 in Tazawa is designed not to mount the semiconductor element on the external electric member, but to electrically connect the semiconductor elements to each other, which is different from Claim 1.

¹ Tazawa, column 1, lines 50-56.

To cure the above deficiency, the outstanding Office Action relies on Damon for showing a semiconductor device that is mounted on an external electric member by inserting leads into a lead inserting portion. Based on the teachings of Damon, the outstanding Office Action states at page 5, first full paragraph, that “it would have been obvious to one of ordinary skill in the art” to modify the device of Tazawa based on the teachings of Damon, such that the interconnection portions 13 in Tazawa would be inserted into the external electric member 15.

However, Applicants respectfully submit that there is no suggestion or motivation² to modify the interconnection portions 13 of Tazawa, which are specifically designed to connect the semiconductor elements among themselves (see above discussion), to connect the semiconductor element to an external electric member, when the semiconductor device of Tazawa is already connected through the leads 12 to the external electric member 15 as discussed above.

If the outstanding Office Action considers one of the semiconductor elements of Tazawa as corresponding to the external electric member, then Tazawa clearly shows that the interconnection portions 13 are not inserted into the external electric member, as required by independent Claim 1.

In addition, Applicants respectfully submit that Damon specifically states that “the novel cartridge 21 consists of an axially symmetric single generally rectangular plastic mold”³ (underline added), which is contrary to the assertion of the outstanding Office Action at page 4, first full paragraph, that element 21 of Damon is “an external electric member 21.”

² See MPEP 2143.01 stating “[o]bviousness can only be established by combining or modifying the teaching of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art,” (citations omitted). See also MPEP 2144.08 III stating that “[e]xPLICIT findings on motivation or suggestion to select the claimed invention should also be articulated in order to support a 35 U.S.C. 103 ground of rejection. . . Conclusory statements of similarity or motivation, without any articulated rational or evidentiary support, do not constitute sufficient factual findings.”

³ Damon, column 5, lines 31-40.

Further, Damon shows in Figure 7 that the leads 13 of the semiconductor element 12 are inserted into the plastic cartridge 21 and a terminal member 77 connects the leads 13 of the semiconductor element 12 to an external electric wire 84.

Accordingly, it is respectfully submitted that Damon does not teach or suggest “inserting said leads 13 into a lead inserting portion 46 of said external electric member” as asserted by the outstanding Office Action at page 4, first full paragraph.

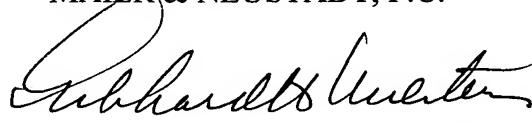
Therefore, Applicants respectfully submit that the combination of Tazawa and Damon is improper and thus, Claim 1 and each of the claims depending therefrom patentably distinguish over Tazawa and Damon, either alone or in combination.

Further, even if the above combination is proper, Applicants respectfully submit that the combination does not teach or suggest each feature of Claim 1, i.e., leads inserted into a lead inserting portion of an external electric member because Damon teaches leads inserted into a plastic mold and not into an external electric member.

Consequently, in light of the above discussion, this application is believed to be in condition for allowance and an early and favorable action to that effect is respectfully requested.

Respectfully submitted,

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